

MACHINE DESIGN

1966 ANNUAL INDEX

Volume 38—January to December

Including 26 regular issues of MACHINE DESIGN plus four special issues—*The Bearings Reference Issue*, *The Plastics Reference Issue*, *The Fluid Power Reference Issue*, and *The Electric Controls Reference Issue*. Only articles and editorial items one-half page or larger are indexed.

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1. Title.
 2. Author's last name (see Author Index for complete name). Departments in regular issues are denoted by the following code:

Trends	Trends in Technology
	or Trends in Design and Development
Scan	Scanning the Field for Ideas
DIA	Design in Action
PR	Picture Report
DI	Design International
 3. Date of issue, MACHINE DESIGN *Reference Issues* are denoted by the following code:

B	Bearings (March 10)
P	Plastics (June 16)
FP	Fluid Power (September 22)
EC	Electric Controls (December 15)
 4. Page Number.
 5. Number of pages in article or editorial item.

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Brushless D-C Motors	Yates	3/3	136	(6.5)
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Most Powerful D-C Motor	Trends	6/9	34	(0.5)

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Regenerative Fuel Cell Achieves High Efficiency	Trends	1/6	24	(0.5)
Fuel Cell Works after Its Rocket Blows Up	Trends	7/21	14	(0.6)
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Thin-Film Solar Cells Are Ready for Space Tests	Trends	8/18	14	(0.6)
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Electric Vehicles May Evolve from the Military	Trends	12/8	16	(1.0)
Gated Transformer Cuts Condenser Charge Time	Scan	6/9	139	(0.6)
Piggyback Windings Anticipate Flux Saturation	Scan	9/29	128	(1.0)
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	DIA	9/15	50	(0.5)

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Laser Beam Acts Like Electric Arc in Breaking Down Gases	Trends	10/13	34	(0.6)
New Laser Generates Giant Pulses in a Tight Beam	Trends	10/27	24	(0.3)
Integrated Circuits are 'Glued Down' on Glass	Trends	11/10	32	(0.4)
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Tiny Circuit Reacts in 400 Picoseconds .. Braided Connector Flexes Without Loosening	Trends	11/24	25	(0.5)
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	Scan	5/26	168	(0.5)
	Scan	7/7	136	(1.0)
	Scan	9/1	132	(0.5)
	Scan	9/1	115	(0.5)
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faces	Orr	11/10	207	(3.0)
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Thermo-electric Art	Trends	1/20	16	(1.0)
A-C Wheel Impresses the Army	Trends	2/3	8	(0.5)
Muscle Currents Control Motor-Driven				
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Fluid Drives, Controls and Systems

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ing Foldable Tube	Trends	10/27	27	(1.8)
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Command	Scan	3/17	182	(0.5)
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Piston Travel Unlocks Load	Scan	9/29	122	(1.0)
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Sites Quiet	DIA	12/22	41	(0.4)
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ing LP-Gas Injector	DIA	11/10	37	(1.0)
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Mechanical Drives, Controls and Systems

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Surface Area of Combustion Chamber Called Key to Efficient Auto Engine	Trends	2/3	12	(0.5)
Coming: The Combustible Rocket Motor	Trends	2/3	16	(0.5)
SNAP-10A Prototype Sets New Reactor Records	Trends	2/17	10	(0.6)
New Combustion System Upgrades Diesel Rocket Belts Make Their Move To Power	Trends	3/3	12	(0.5)
Two Moon-Surface Hoppers	Trends	3/31	8	(1.0)
Solar-Electric Propulsion Is Judged OK for Mars Probes	Trends	4/14	10	(0.6)
Grounded J-79's Find a Home in a Powerplant	Trends	4/14	12	(0.7)
NERVA Tests Prove Nuclear Propulsion Practical	Trends	4/28	8	(1.0)
SNAP 10-A Completes Record Run	Trends	4/28	14	(0.5)
Rammed-in Air Steers a Booster	Trends	4/28	22	(0.6)
Nuclear-Electric Generator Joins the Army and Goes to Sea	Trends	5/12	14	(1.0)
Feed the Fuel to the Crew First	Trends	5/12	19	(0.5)
Radio Catapults Down a Track to Measure Rocket's Exhaust Noise	Trends	9/15	14	(0.6)
SNAP Turboalternator 'Takes a Breath' after 4700 hr	Trends	9/29	10	(0.5)
Best Fuel for the SST... Natural Gas?	Trends	10/13	12	(0.5)
Buried Reactor Wins Army Go-Ahead	Trends	10/13	14	(0.5)
Underwater Powerplants Harness the Ocean Tides	Trends	10/27	24	(0.7)
Quick-Decaying Isotope Shrinks SNAP Designs	Trends	11/10	12	(0.7)
Nuclear Powerplant Sets Military Performance Record	Trends	11/10	14	(0.4)
From Diesels to Giesels: Three New Engines Bow	Trends	11/10	20	(2.0)
Rocket Belt Takes a Load off Man's Shoulders	Trends	12/8	8	(0.7)
New Cermet Igniter Cleans Auto's Exhaust	Trends	12/8	19	(0.7)
Agenda Switches to Separate Engines for Course Corrections	Trends	12/8	22	(0.4)
Spike Guides Exhaust Gases out of New Rocket	Trends	12/22	12	(0.7)
Hybrid Rocket Tries out as Target-Missile Engine	Trends	12/22	14	(0.6)
Ceramic Afterburner Cleans Up Engine Exhaust	DIA	3/17	48	(0.6)
Bypass Supercharges Four-Stroke Engine	DIA	6/23	58	(1.0)
Off-the-Shelf Wankel Engines Near Volume Production	DIA	9/1	30	(2.0)
New Formula II	DI	12/8	58	(0.5)

32-34. Drives, Transmissions, Drive Components

Precision Gear Trains:				
Part 1—Gear Selection	Michalec	2/3	126	(10.0)
Part 2—System Design	Michalec	2/17	178	(8.0)
Spur-Gear and Worm Sets	Buckingham	3/3	112	(6.0)
Speed Limits for Chain Drives	Horner	4/14	183	(3.0)
Backlash in Gears	Michalec	4/28	204	(10.0)
Gear Train Accuracy:				
Part 1—Backlash	Michalec	6/9	126	(8.0)
Part 2—Transmission Error	Michalec	6/23	166	(4.0)
Slow-Speed, Roller-Chain Drives	Reibel	8/4	159	(3.0)
Ultra-Precise Gear Ratios	Robinson	12/8	191	(3.0)
Horsepower Losses in Roller-Chain Drives	Archibald	12/22	127	(2.0)
Three-in-One Transmission Smooths Power Flow	Trends	9/15	28	(0.5)
Computer Takes Over Conveyor Design	Trends	10/13	25	(0.4)
Chain Actuator Pushes with Nested Links	Scan	1/6	133	(0.5)

Composite Gear Meters Integral Lubricant	Scan	1/20	154	(0.5)
Dissimilar Vanes Damp Vibration	Scan	2/3	136	(0.6)
Crossed Rollers Accommodate Conveyor Dips and Turns	Scan	5/12	161	(0.5)
Nested Cones Transmit Reversible Torque	Scan	7/21	171	(1.0)
Swiveled Axes Nullify Road Wrinkles	Scan	8/4	145	(0.5)
Gear Train Simulates Crank Mechanism	Scan	9/1	132	(0.5)
Manual Drive Aims Half-Ton Radio-telescope Horn	DIA	7/21	44	(2.0)
"Lawn-Mower" Drive Helps Truck through the Mud	DIA	8/18	42	(1.0)

35. Rotational Components

Basic Bearing Types	DeHart	B 3/10	15	(7.0)
Bearing Materials and Properties	Booser	B 3/10	22	(7.0)
Cast Bearings	Hudak	B 3/10	29	(6.0)
Strip-Type Bearings	Pesek	B 3/10	35	(5.0)
Powder-Metal Bearings	Johnson	B 3/10	40	(5.0)
Plastic Bearings	Carswell	B 3/10	45	(4.0)
Radial Ball Bearings	Savard	B 3/10	49	(2.9)
Angular-Contact Ball Bearings	Bakewell	B 3/10	52	(3.0)
Thrust Ball Bearings	Knotts	B 3/10	55	(2.0)
Instrument Bearings	Pierson	B 3/10	57	(7.0)
Unground Ball Bearings	Smith	B 3/10	64	(2.0)
Cylindrical and Journal Roller Bearings	Biesmeyer	B 3/10	66	(4.0)
Self-Aligning Spherical Roller Bearings	Heinlein	B 3/10	70	(3.0)
Tapered Roller Bearings	McKelvey	B 3/10	73	(4.9)
Thrust Roller Bearings	Greiner	B 3/10	78	(4.0)
Needle-Roller Bearings	Glazier	B 3/10	82	(5.0)
Premounted Bearings	Lower	B 3/10	87	(5.0)
Rolling-Element, Linear-Motion Bearings	Hope	B 3/10	92	(3.0)
Hydrostatic Gas Bearings	Rieger	3/31	106	(10.0)
Thrust Bearings:	Rippel			
Part 1—Configurations and Performance Variables		4/14	175	(8.8)
Part 2—Optimum Performance and Acceptable Design		4/28	197	(7.0)
Part 3—Lubricant Temperatures and Heat-Balance Techniques		5/12	209	(7.0)
Part 4—Procedure for Optimum Design		5/26	190	(12.0)
Part 5—Performance Evaluation		6/9	141	(7.5)
Slip Clutches	Bickford	7/21	172	(6.0)
Shear Necks	Kent	9/1	138	(1.0)
Thrust Bearings:	Rippel			
Part 6—Flat-Pad Design and Analysis		9/1	122	(10.0)
Part 7—Misaligned Plain Thrust Bearings		9/15	207	(15.0)
Part 8—Fixed and Movable Types		9/29	123	(5.0)
Rolling-Element Bearings	Zaretsky	10/13	205	(19.0)
Partially Lubricated Thrust Bearings	Rippel	11/24	139	(6.0)
Quick Test Shows Inherent Weaknesses in Brake and Clutch Friction Materials	Trends	4/14	18	(0.7)
"Flying Boxcar" Will Test Air-Cushion Landing System	Trends	5/12	10	(1.0)
Fold-Up Spare Saves Auto Trunk Space	Trends	10/27	8	(0.4)
Wrapped Bands Shrink One-Way Clutch	Trends	11/24	19	(1.0)
Twisting Sleeve Senses Torque	Scan	4/14	159	(0.6)
Negative-Rate Spring Regulates Torque	Scan	8/4	139	(1.0)
Steerable Rollers Switch Conveyor Flow	Scan	8/18	148	(1.0)
Mismatched Splines Lock Shaft Joint	Scan	9/15	206	(1.0)
Buckling Diaphragm Shifts Shaft Coupling	Scan	10/13	228	(1.0)
Pawl Mechanism Cancels Brake Wear	Scan	11/10	192	(1.0)
Rolling Balls Soften Coupled Acceleration	Scan	11/24	148	(0.5)
Spinning Flexures Control Linear Thrust	Scan	12/8	189	(0.6)
Full-Safe Bogie Won't Let Trailer Down	DIA	4/14	56	(1.0)
Suspension System Gives Negative Camber When Cornering	DIA	5/12	49	(0.6)
Radial-Ply Tire Carries Detachable Tread	DIA	5/26	44	(1.0)
Vacuum-Actuated Brake Stops Car Creep	DIA	9/15	46	(1.0)
Bug Makers Bow to U. S. Safety Regulations	DI	10/13	40	(0.4)

36, 37, 39. Mechanisms, Controls, Systems

Determining Minimum Cam Size	Fenton	1/20 155	(4.0)
Joystick Maneuvers, Speeds, and Brakes a Sub	Trends	1/20 10	(0.7)
Apollo Docking Is Simulated with "Air- Bearing Spacecraft"	Trends	8/4 12	(0.6)
"Mohole Anchor" Finds a Job in Industry	Trends	8/18 18	(0.7)
Electrostatic Gyro Coasts for Three Years	Trends	12/22 10	(0.5)
Eccentric Lever Adjusts Precise Cutter	Scan	1/20 166	(0.7)
Skewed Rollers Propel Actuator	Scan	2/3 114	(0.5)
Tapered Cam Controls Feedback	Scan	2/17 162	(0.6)
Rolling Ball Monitors Tilt	Scan	6/23 170	(1.0)

Sandwiched Ring Cuts Seal Rub	Scan	6/23 175	(0.5)
Stepped Fulcrum Lifts Load	Scan	7/7 115	(1.0)
Crossed Cam Slots Convert Linear Motion	Scan	8/18 164	(0.5)
One-Turn Gear Set Simplifies Divider	Scan	10/13 178	(0.3)
Index	Scan	12/8 194	(1.0)
Linkage Generates Hesitation Output	Scan		
Spring-Controlled Drum Peels Backing	DIA	1/20 34	(1.0)
Tape	DIA		
Oscillating Paddle-Wheel Tests Thin-Strip	DIA	3/3 41	(1.0)
Fatigue Life	DIA	4/14 50	(2.0)
Linkage Prevents Common Typing Goofs	DIA		
Rolling Cylinder Reduction System Po- sitions Lens	DIA	7/7 28	(1.0)

Assembly Components

41-43. Fasteners, Springs, Misc.

Fastening Gears	Michalec	1/6 139	(5.0)
Hairspring Design	Raedy	5/12 202	(6.0)
Squeeze-Film Damping	Sommer	5/26 163	(4.8)
Poor Spring Performance	Johnson & Joerres	8/4 132	(7.0)
Fatigue in Bolts	Walker & Meyer	9/15 182	(5.0)
Maximum Bolt Tension	Bazaz	9/29 129	(1.5)
Freedom in Bolted Joints	Dinter	10/27 159	(4.8)
The Future of Fasteners	Sproat	12/22 107	(16.0)
Self-Consuming Shock Absorber May Win LEM-Landing Assignment	Trends	5/12 8	(0.5)

New Process Cuts Cost of Drive Rivets	Trends	7/21 32	(0.7)
Threaded Cap Strengthens Plastic Boss	Scan	3/17 151	(0.6)
Recurrent Images Freeze Vibration Peaks	Scan	5/12 170	(0.5)
Integral Jack Jams Locknut	Scan	6/23 165	(1.0)
Single Bolt Secures Strut Cluster	Scan	6/23 176	(1.0)
Midair Collision Eliminates Forge Shock	Scan	9/15 222	(1.0)
Gimbal Isolates Mirror-Adjust Axes	Scan	11/24 138	(1.0)
Experimental Truck May Triple Freight- Train Speed	DIA	9/1 35	(1.0)
Skiers Need Not Pray for Snow	DIA	11/10 42	(1.0)
Cage-Wheels Prevent Tractor Bog Down	DIA	11/10 46	(0.4)
X-ray System Checks Explosive Bolts	DIA	12/22 41	(0.6)

Materials

51, 52. Ferrous, Nonferrous Metals

Aluminum Castings	(Article)	5/12 191	(3.0)
Investment Casting Metals	Broad	6/23 177	(7.0)
Stainless Steel Welds	Reid	11/10 193	(5.0)
Malleable-Iron Parts	Hunsaker	11/24 170	(4.0)
Boron Filament Winds up in a Rocket	Trends	1/6 12	(0.5)

53. Plastics

The New Plastics	Dreger	1/20 144	(10.0)
Fiberglass-Reinforced Nylon	Metz	2/17 187	(6.0)
ABC's of Plastics	Elliott	4/28 188	(9.0)
Embedding Processes and Materials	Harper	6/9 149	(25.0)
Selecting Plastics	Fox	P 6/16 4	(8.0)
Designing with Plastics	(Chapter)	P 6/16 12	(6.0)
Laminated Plastics	Muller	P 6/16 31	(5.0)
Reinforced and Filled Plastics:			
Thermosets	Sprang & Davis	P 6/16 36	(2.6)
Thermoplastics	Murphy	P 6/16 38	(4.4)
ABS	Whitney	P 6/16 43	(3.0)
Acetals	Kjellmark	P 6/16 46	(3.0)
Acrylics	Pierson	P 6/16 49	(2.0)
Cellulose Acetate	Black	P 6/16 51	(1.7)
Cellulose Propionate	Black	P 6/16 52	(1.1)
Ethyl Cellulose	Bird	P 6/16 53	(1.9)
Cellulose Acetate Butyrate	Hill	P 6/16 55	(1.3)
Chlorinated Polyether	Hanna	P 6/16 57	(2.0)
Ethylene-Vinyl Acetate	Pilaro	P 6/16 59	(1.0)
TFE-FEP Fluorocarbons	Lovell	P 6/16 60	(5.0)
CTFE Fluorocarbons	Bringer	P 6/16 65	(2.0)
Ionomers	Kinsey	P 6/16 67	(1.0)
Nylons	Carswell	P 6/16 68	(4.0)
Parylenes	Gorman	P 6/16 72	(1.0)
Phenoxies	Henriques	P 6/16 73	(1.0)
Polyallomers	Vermillion	P 6/16 74	(1.0)
Polycarbonates	Kunze	P 6/16 75	(2.0)
Polyethylenes	Estes	P 6/16 77	(4.0)
Polyimides	Todd	P 6/16 81	(3.0)
Polyphenylene Oxides	Shenian	P 6/16 84	(2.0)
Polypropylenes	Jones	P 6/16 86	(3.0)
Polystyrenes	Otting	P 6/16 89	(4.0)
Polyulfones	Walton	P 6/16 93	(2.0)
Vinyls	Bulkley	P 6/16 95	(5.0)
Alkyds	Beers	P 6/16 100	(2.0)
Allylics	Beacham	P 6/16 102	(2.0)
Amines	Sunderland	P 6/16 104	(3.0)
Epoxies	Reese	P 6/16 107	(2.0)
Phenolics	Bainbridge	P 6/16 109	(3.0)
Polyesters	Thornton	P 6/16 112	(3.0)
Silicones	Kin	P 6/16 115	(2.0)
Urethanes	Backus	P 6/16 117	(3.0)

TFE-Lubricated Thermoplastics	Lomax & O'Rourke	6/23 158	(7.0)
Synthetic Materials	Rondeau	7/21 151	(10.0)
Molecular Orientation in Plastic Parts	Paulson	10/13 190	(8.0)
Whisker-Reinforced Plastics	Wohrer, Frechette, & Economy	12/22 135	(2.3)
Plastic Gas Tanks May Soon Appear in Cars	Trends	2/17 30	(0.5)
Photosensitive Plastic Makes Precision Tachometer Disc	Trends	5/12 26	(0.5)
Fiberglass Earns Its Dolphins	Trends	6/23 8	(1.0)
Nylon Eliminates Springs in Indicator Switch	Trends	6/23 26	(0.7)
Smooth Road Ahead for Plastic Gas Tanks	Trends	7/7 24	(0.7)
"Off-the-Shelf" Fiberglass Yacht Wins Racing Crown	Trends	9/1 12	(0.6)
Reinforced Plastics to Keep Subway on Course	Trends	9/1 19	(0.5)
New Amide-Imide Plastics Stay Strong at 600 F	Trends	10/27 32	(0.6)

54-56. Elastomers, Joining Materials, Others

Structural Adhesives and Composite Materials	Roseland	3/17 189	(3.2)
Fiber-Glass Fabrics	Horton	3/31 152	(2.8)
Thermoplastic Elastomers	Luftglass	4/14 194	(4.1)
Sodium Looks Promising as a Practical Conductor	Trends	1/6 24	(0.5)
Foam and Rubber Team Up to Reduce Auto-Race Fire Hazards	Trends	4/28 10	(0.6)
Anaerobic Adhesives Go Structural	Trends	6/9 23	(0.6)
Graphite Proves Effective as a "Laser Saver"	Trends	7/7 26	(0.6)
Scratched-Glass "Pressure Hull" Survives Deep Submergence	Trends	7/21 21	(0.6)

57. Finishes, Coatings, Lubricants

Oils and Greases	Dunham	B 3/10 4	(4.5)
Solid and Bonded-Film Lubricants	DiSapio	B 3/10 8	(3.5)
Decoration and Surface Finish	Scharnberg	P 6/16 28	(3.0)
Heavy-Metal-Derivative Solid Lubricants	Magie	12/8 203	(3.8)
New "Grease" Meters Lube Oil to Sleeve Bearings	Trends	3/3 24	(0.5)
New Finish Adds Life to Aluminum Elec- trical Parts	Trends	3/3 28	(0.6)

58. Prefabricated Forms

Tubing For Mating Parts	Fling	2/3	111	(4.0)
Perforated Metals	Siebert	3/17	152	(7.0)
Milled Contour Strip	Hood	5/26	187	(3.0)
Ceramic-Metal Composites	Smith	9/15	201	(5.0)
Compensating Bimetal Elements	Wiedemann	12/22	123	(3.0)
Evaporated Film Promises Better Photos	Trends	2/3	12	(0.5)
Wind-Out Columns Gain Favor as Space				
Antennas and Supports	Trends	7/7	14	(0.5)
Bricked-up Pressure Hull Survives Deep				
Submergence	Trends	9/1	8	(1.0)

Rigid Solar Mirror is 'Shaved Thin' Out				
of 1-in. Magnesium	Trends	9/15	12	(0.8)
Man Bites Dog—Steel Replaces Plastic..	Trends	9/15	22	(0.7)
Coating Stops Tape Breakage in Short-				
Landing System	Trends	12/22	14	(0.4)
Corrugated Sheets Form Compound Curves	Scan	1/20	164	(0.5)
Capacitive Tape Senses Tank Leaks	Scan	5/12	170	(0.5)
Wetted Tapes Form Ribbon Battery	Scan	6/9	148	(0.5)
Multiple Nets Snare Runaway Aircraft	DIA	5/26	42	(1.0)
Collapsible Tube to Make Rigid Space-				
craft Boom	DIA	7/21	50	(1.0)

Manufacturing Methods and Processes

61-63. Metals Casting, Shaping, Forming

Steel Castings	Briggs	3/31	123	(3.0)
Filament-Wound Parts	Garritano	4/14	166	(7.0)
Explosive Forming	Rasmussen	4/28	254	(2.3)
Aluminum Castings	(Article)	5/12	191	(3.0)
Properties of Powder-Metal Parts	Felr	6/9	178	(3.2)
Aluminum Impact Extrusions	Hall	8/4	140	(5.0)
Magnetomotive Forming Developments				
and Magneto-hydraulic Forming	Schwinghamer	9/29	151	(0.7)
Castings With Inserts	Seal	10/27	157	(5.0)
Low-Cost Core Produces Die-Cast Threads	Trends	1/20	22	(0.6)
Cold-Forming Produces Wide Range of				
Gears	Trends	3/17	22	(0.7)
New Process Casts Single-Crystal Parts	Trends	3/31	32	(0.5)
Die Casting of Ferrous Metals Approaches				
Commercial Reality	Trends	6/9	26	(0.8)
High-Density Diecastings Made by New				
Process	Trends	8/4	29	(0.5)
High-Density Diecastings Now Ready for				
the Tough Jobs	Trends	9/15	25	(1.0)
Cast-Weld Method Produces 35-Ton Pump				
Casings	Trends	10/13	28	(0.5)
Powered Knuckles Squeeze Metal Gloves	Scan	11/24	169	(1.0)
Rocking Dies Reduce Billet Size	DIA	11/10	40	(1.0)

64-66. Metals Joining, Removal, Treating

Dip-Brazed Aluminum Assemblies	Krebs	8/18	158	(6.0)
Assembling with Adhesives	Sharpe	8/18	178	(23.0)

Electron-Beam Welder Works Well in				
Space	Trends	10/13	12	(0.5)
Drop Smasher Quenches Metals at				
1,000,000 Deg per Sec.	Trends	11/10	25	(1.0)
Tig-Quality Welds Made At Mig Speeds..	Trends	11/10	29	(0.4)
Zippered Seam Strengthens Extendible				
Boom	Scan	3/17	163	(0.5)
Friction Weld Bonds Packing Case Bands	DIA	7/21	48	(1.0)
Tiny Sand Blaster Cleans or Cuts Pre-				
cision Parts	DIA	11/10	43	(1.0)
Ram-Mounted Tool Grinds out Die-Mak-				
ing Electrodes	DIA	11/24	39	(1.0)

67-69. Metals Finishing, Plastics Processes

Embedding Processes and Materials	Harper	6/9	149	(25.0)
Forming and Fabricating Plastics	Carlyon	6/16	18	(4.0)
Plastics Assembly Methods	(Chapter)	6/16	22	(6.0)
The Staggering Scrap Spectacle	Barnes	7/7	116	(8.0)
Bias-Sputtered Thin Films	Seeman	9/15	225	(3.7)
Technology in Turmoil: Producing the				
Impossible	Khol	9/29	131	(20.0)
Flame Spraying	Dennison	12/8	168	(5.0)
Process Promises Durable Plating on				
Aluminum	Trends	1/6	20	(0.7)
Shake-and-Spin Technique Fills Stator				
Voids with Insulation	Trends	8/4	32	(0.7)
Two More Plastics Join 'The Plastics'	Trends	12/8	28	(1.0)
Black Chrome Plate Absorbs up to 97%				
Light	Trends	12/22	18	(0.7)
Card-Programmed Plating System Uses				
Leap-Frog Conveyor	DIA	10/27	40	(2.0)

Design Theory and Techniques

71, 72. Mechanics, Strength of Materials

Fatigue Stresses from Complex Loadings	Little	1/6	145	(5.0)
Strength of Screws and Tapped Holes....	Lipari	1/20	187	(3.7)
Vibration Reduction Techniques	Baumann	1/20	172	(4.1)
Materials That Creep	Alexander	3/3	120	(8.0)
Factor Of Safety	Little	7/21	165	(6.0)
Noise Measurement Methods	Ranz	11/10	199	(7.7)
Center of Gravity by Photography	Nachlupins	11/24	145	(3.0)
The True Design Strength of Materials				
and Joints	Smith	12/8	181	(8.4)
Exploding Foil Tips Off Nuclear-Shock				
Secrets	Trends	6/23	14	(1.0)

74. Human Factors Engineering

The Disposal Gap	Barnes	3/17	144	(7.0)
Packaging a Delicate Payload	Wise	6/9	120	(6.0)
New Deep-Diving Hardware	Barnes	8/4	124	(8.0)
Relieving Acoustic Fatigue	Tolhurst	8/4	168	(3.6)
"Living" Manikin Will Let Young Physi-				
cians Practice	Trends	1/20	14	(0.7)
Train in a Tunnel Is Like a Plane in a				
Dive	Trends	2/3	8	(0.5)
Reasons Are Cited for the Auto-Exhaust				
Rebellion	Trends	2/3	16	(0.5)
Bring Back the Electric Auto	Trends	5/26	22	(0.5)
LEM Life-Support System Is Ready for				
the Moon Flight	Trends	7/7	14	(0.8)
Bolted-on Armor Protects Chinook Crews				
and Equipment	Trends	7/7	16	(1.0)
FAA Suggests Revising Aircraft Safety				
Rules	Trends	9/1	14	(0.6)
Bagging a Spaceman	Trends	9/29	10	(0.5)
Helicopter Escape System Proves Feasible	Trends	10/13	8	(0.7)

Truck-Crash Survey Shows the Driver is				
Too Often Mangled	Trends	10/13	14	(0.5)
Magnetic Fields Support Wind-Tunnel				
Model	DIA	1/6	30	(0.5)
Fail-Safe Design	DIA	2/17	35	(4.0)
Gun Blast Opens Pilot's Parachute.....	DIA	4/14	54	(1.0)

75. Design Analysis and Synthesis

Network Planning Techniques	Magnus	1/6	102	(9.0)
Watt's Linkage Analysis	Amort	2/3	115	(1.0)
Natural Frequencies of Cantilever Bars..	Weindling	2/3	137	(3.4)
Calculating Link Lengths	Li	2/17	193	(2.0)
Natural Frequencies	Hassoun	3/3	143	(2.0)
Man-Computer Graphic Communication..	Chasen	3/3	145	(2.8)
Statistical Jargon	Ahlbeck	3/17	159	(4.0)
Unsymmetrically Loaded Beam Deflections	Cuppan	3/17	183	(3.5)
Determining Linkage Proportions	Timko	3/31	127	(3.8)
Thin-Plate Natural Frequencies	Vet	6/9	175	(3.0)
Gear Train Accuracy	Michalec	7/7	130	(5.8)
Part 3—Total Gear-Train Position Error				
Slow-Speed, Roller-Chain Drives	Reibel	8/4	159	(3.0)
Time-Sharing of Computers	Lavoie	8/18	140	(8.0)
How to Talk to a Computer	Wasserstrom	10/27	140	(6.0)
The Odds against Fracture, or Predicting				
Strength of Brittle Structures	Barnett, Costello & Herman	11/10	184	(7.6)
Industry Sponsors Graphic Symbols for				
Fluids	Trends	4/14	29	(2.0)
Make-Believe Boat Proves Its Hydrofoils				
Stable	Trends	5/26	14	(0.7)
Prepackaged Programs Reduce Math				
Leg-Work	Trends	5/26	24	(0.5)
Lockheed Talks Over Its SST Design....	Trends	7/21	10	(1.6)
Models Simulate 'Fantastic Voyage' In-				
side Molten Metals as They Cool....	Trends	11/24	22	(0.7)

76. Basic Sciences

The Search for Extraterrestrial Life	Wise	7/21	148	(6.0)
Superconductive Devices	Flynn	8/18	202	(5.0)
Cryosurgery	Barron	10/13	184	(6.0)
Cryobiology	Barron	10/27	150	(6.0)
Optical Choppers	Cade	10/27	167	(4.0)
Fiber Optics Replace Lens in New Oscilloscope	Trends	10/27	21	(0.4)
Cannon-Fired Ground Wire Might Turn off a Tornado	Trends	11/10	10	(1.0)
Trapped Light Traces Liquid Level	Scan	7/21	164	(1.0)
Hole-less Mask Crops Optical Field	Scan	8/18	164	(0.5)
Prism Array Forms Movement Multiplier	Scan	12/8	190	(1.0)
No-Blur Film Editor Relies on Precision Casting	DIA	9/29	35	(1.0)
Pollution Clean Up	DI	10/27	48	(0.3)
Open-Heart Surgery Patient "Breathes" with Membrane-Drum Lung	DIA	12/22	32	(1.0)

77. Experimental, Advanced Design

The Plight of Fundamental Research	Raudsepp	8/18	149	(3.0)
Automakers Shun Road and Track for Design/Durability Testing	Wise	8/18	152	(6.0)
Stand-Ins for Product Testing	Reinert	9/1	116	(5.5)
Industry, Government, & the Engineer	Raudsepp			
Part 3: Coping with Government Contracts		10/13	179	(5.0)
Fastest Gun in a Wind Tunnel Creates Back-from-the-Planets Speeds	Trends	8/18	10	(0.7)
Iron Bird 'Flies' Boeing 737 Control Systems	Trends	11/24	8	(1.0)
'Sports Tractor' Tows Predictable VTOL Prop	Trends	12/22	10	(0.5)
Emergency Procedures	PR	12/8	4	(0.7)

78. Environmental Design

Designing for Extreme Environments	Kee	2/17	196	(4.6)
Immaculate Voyager Will Visit Mars	(Article)	3/3	106	(6.0)
Human Factors Shape MOLAB	Seminara	5/26	148	(6.0)
New Deep-Diving Hardware	Barnes	8/4	124	(8.0)
Stopping Metal Corrosion	Suss	10/13	199	(5.0)
Humanizing a Moon Rover	Seminara	11/24	124	(5.0)

Newly Christened, Deepstar-4000 Prepares for Chartered Dives	Trends	1/6	8	(1.0)
New Hardware is Needed for Harvesting the Sea	Trends	1/6	10	(0.5)
Apollo Backpack Sustains Trotter Three Hours	Trends	1/6	14	(0.8)
Study Groups Urge Ten-Year Lunar Exploration	Trends	2/3	14	(0.5)
Recovery Systems Are Ready for the Returning Moon Craft	Trends	2/3	14	(0.5)
State-of-the-Art Rescue Rocket Could Double as Service Craft	Trends	2/17	8	(0.5)
Seven Experiments Are Chosen To Be Left Behind on the Moon	Trends	2/17	16	(0.6)
Reusable Spacecraft Would Accelerate Slowly	Trends	3/17	10	(0.5)
Two Volunteers Try 21 Days in a Moon Rover	Trends	3/17	12	(0.6)
Follow the Bouncing Doughnuts	Trends	3/31	10	(0.7)
Life Support Know-How Is Put to the Test	Trends	3/31	14	(0.7)
"Apollo Classrooms" Are Ready To Test Spacecraft and Crews	Trends	3/31	16	(0.6)
Scuba Researchers Dive 400 ft in a Landlocked Lab	Trends	4/14	14	(1.3)
Post-Apollo Project Evaluates Lunar Hardware, Catalogs State of the Art	Trends	4/14	16	(0.7)
"Open-Minded" Spacecraft Reports, Then Earth Designs the Next Test	Trends	4/28	12	(1.0)
Balsa Geometry Is Called Critical for the Mars-Impact Capsule	Trends	4/28	18	(0.7)
Picture Snapping on Mars Will Expose Film on Earth	Trends	5/12	12	(0.6)
"Iron Pants" Protect Against Backpack Exhaust	Trends	6/23	10	(0.7)
First Manned Glass Submarine Will Flash Orders via Light Beams	Trends	8/4	10	(1.0)
Titanium Pressure Vessels Try Buoying a Deep Diver	Trends	9/15	16	(0.5)
Parachuting Capsule 'Lands on Mars' in Earth's Upper Atmosphere	Trends	9/29	14	(0.7)
Stand-Ins Don Space Garb for Endurance-in-a-Vacuum Checks	Trends	10/13	10	(0.6)
Spacecraft Testers Take a New Look at the Sun	Trends	10/13	16	(1.0)
Future Surveyors Will Park before Blasting for the Moon	Trends	10/27	8	(0.6)
'Real Ocean' Is Created in Tiny Tank	Trends	11/10	16	(0.5)
'Tinker Toy' Space Station May Be Grown out of Old Freighters	Trends	12/22	8	(1.0)
Astronauts Train in Computer-Controlled Universe	DIA	8/4	42	(2.0)
Instrumented Raft Rules the Waves	DIA	8/18	40	(1.0)
Earth Model	PR	11/10	4	(0.4)

Engineering Management, Personal

81. Engineering Department Operations

Engineering Supervision	Raudsepp			
Part 3—Improving the Supervisory-Management Position		1/6	111	(4.0)
Appraising Managerial Talent	Raudsepp	2/3	93	(8.0)
Continuing Education for the Engineer	Gilmore	2/17	154	(2.0)
Engineers Predict Problems of the '70s	Raudsepp	3/3	102	(4.0)
Technology in Ten Years	Raudsepp	3/17	138	(4.0)
Keeping Up with Knowledge	Raudsepp	3/31	96	(4.0)
Selling Ideas to Management	Raudsepp			
Part 1—Preparing for the Premiere		4/28	173	(4.0)
Part 2—On Stage		5/12	156	(5.5)
Getting Results through People	Berra	5/12	218	(2.8)
Soft-Sell Recruiting	Raudsepp	6/9	116	(4.0)
Recruitment Ads That Engineers Read	Raudsepp	7/7	110	(5.0)
Top Technical Talent	Marvin	8/4	120	(4.0)
Effective Engineer Teams	Raudsepp	9/1	100	(4.0)
Industry, Government and the Engineer	Raudsepp			
Part 1—Why Work for the Government		9/15	169	(4.0)
Part 2—Doing Business with the Government		9/29	103	(4.0)
Reducing Technical Turnover	Berenson	9/15	162	(7.0)
Persuasive Communication	Lopata	9/29	100	(3.0)
Industry, Government and the Engineer	Raudsepp			
Part 3—Coping with Government Contracts		10/13	179	(5.0)
Interviewing Engineers: A Lesson in Diplomacy	Charkey	11/10	166	(4.0)
Engineers Okay Overtime	Charkey	11/10	170	(6.0)
A New Look at Cooperative Education	Greenwald	11/24	118	(3.0)
Effective Engineering Budgets	Myers	12/8	152	(4.0)
Management Clinic	Desi	12/8	156	(3.0)
Engineers Appraise Their Working Atmosphere	Barnes	12/22	92	(6.0)
1965 Graduates Choose Higher Education over High Pay	Trends	1/6	16	(0.7)
Salary Increases Are Measured in Dollars and Percentages	Trends	2/3	18	(0.7)
Recovery from Layoffs—Boeing and Boston	Trends	3/3	19	(0.7)
Effects of Technology on Economy Are Reported	Trends	4/28	24	(0.5)
Engineers Are Harder To Hire This Year	Trends	6/23	22	(0.8)
Technician's Salary Can Exceed \$13,000 per Year	Trends	8/18	21	(0.7)
Evolution in Engineering Education	Trends	9/1	16	(1.0)

'Second Sources' of Engineering Talent Can Prevent Technological Underachievement	Trends	10/27	19	(1.0)
High Demand for Engineers Promises To Continue	Trends	11/10	19	(0.7)
Engineers Should Be Educated for Leadership	Trends	11/24	16	(0.9)
Managers Charged with Youth Career Guidance	Trends	12/8	25	(0.8)
Engineer Index Goes Up Again	Trends	12/22	16	(0.7)

82-84. New Products, Drafting, Testing

A Case for Coexistence	Roden	2/17	148	(6.0)
Advise and Consent Function in Design Boundary Concept of Position Tolerance	Kupetzky	5/26	138	(4.0)
Marketing Men vs. Design Engineers	Liggett	10/13	174	(4.7)
Design Automation Available Off-the-Shelf	Putnam	12/22	98	(2.0)
Lens Zooms In at Mach-4 While Testing Missile Homing Device	Trends	1/6	26	(0.7)
Best Power-Steering Ratio Is Sought on Instrumented Course	Trends	5/26	16	(0.8)
Pencil Records Position As It Traces Lines	Trends	7/21	8	(1.0)
New Drawing Standard Introduces Six New Symbols	Trends	7/21	28	(0.5)
Noise Generator Simulates Rocket Blast	Trends	10/13	22	(0.3)
No Plumbing Needed for Table-Top Dark Room	DIA	3/17	43	(1.0)
	DIA	10/27	35	(1.0)

85. Technical Information

Identification of Parts and Drawings	Simonton	1/20	159	(5.0)
A Defense of Knowledge	Gallagher	3/17	142	(2.0)
File Now—Find Later	Burgess	4/28	176	(5.0)
Field Failure Reports	Zawacki	6/23	136	(5.0)
What's Wrong With IR?	Berul & Sayer	7/7	106	(4.0)

Parts Identification Systems	Pohs	7/21	142	(6.0)
Information Systems	Liston	7/21	190	(4.0)
The Art of Active Listening	Olson	9/1	104	(2.0)
Graphic Symbols	Long	FP 9/22	4	(3.0)
USASI Heads Standards Team; Federal Charter Next	Trends	10/13	19	(1.7)
Pneumatics Manufacturers Strive for Standardization	DI	10/13	40	(0.3)

86, 87. Patents, Personal, Professional

Registration, Reciprocity, and the Non-mad Engineer	Constance	1/20	135	(3.0)
Personal Outlook	Raudsepp	4/14	157	(2.0)

Creativity and the Critical Attitude	Raudsepp	5/26	142	(5.0)
Our Ailing Patent System	Thomas	6/23	141	(3.0)
Industry, Government and the Engineer: Part 4—Attitudes on Ethics	Raudsepp	10/27	146	(4.0)
Teamwork Stiffles Creativity	Raudsepp	11/24	121	(3.0)
Personal and Career Development	Huse	11/24	176	(2.3)
Engineer's First Degree Should Be Master's	Trends	3/17	19	(0.3)
Design Conference '66 Looks to the Future	Trends	4/14	26	(1.0)
Survey Reveals Management Attitudes toward Inventor Royalties	Trends	6/9	20	(1.0)
Changes Proposed for International Patents	Trends	7/7	20	(0.3)
NSPE Delegates Approve New Membership Criteria	Trends	9/29	16	(0.7)

Specific Machines and Equipment

911. Ordnance

Anti-Missile Missile	(Article)	1/6	116	(4.0)
Breakthrough in Small Arms	Barnes	1/6	120	(4.0)
Mock War Machines	(Article)	4/14	160	(6.0)
Supercold Rocket Passes Hot Start and Restart Tests	Trends	2/17	8	(0.5)
A Gemini First: Splashdown in Pacific	Trends	3/31	12	(1.0)
Ten-Nike "Bowstring" Launches Mach-2 "Arrowhead" Sled	Trends	8/4	8	(0.8)
Cannon Launcher Cuts Rocket Weight by 10:1	Trends	9/15	10	(0.6)
007-Style Shotgun Built for Rough Handling	DIA	1/6	32	(1.0)
Dual-Position Hammer Adjusts Gas Gun's Hitting Power	DIA	1/20	44	(2.0)
Interchangeable Parts Make Six-in-One Weapons System	DIA	3/31	46	(2.0)
Rifle Redesign Benefits from Combat Experience	DIA	5/12	40	(2.0)
T-Bolt Rifle Revives Straight-Pull Action	DIA	9/15	42	(2.0)
Missile Quartet	DI	10/27	45	(0.3)

912. Machinery

The Great Garbage Explosion	Barnes	2/3	100	(10.0)
Machines That Walk	Barnes	2/17	156	(6.0)
The Staggering Scrap Spectacle	Barnes	7/7	116	(6.0)
Master and Slave See the Same Scene Even While Both Turn Their Heads	Trends	3/17	14	(0.7)
Nuts Move through Tapping Machine in Continuous Flow	Trends	7/7	29	(1.0)
'Tractor of Tomorrow' Tests Farmer's Reactions	Trends	9/15	16	(0.5)
Tiny Turbine Turns Trees into Toothpicks	Trends	11/24	10	(0.4)
Crossed Chutes Mix Materials	Scan	3/3	118	(1.0)
Starwheels Control Feeder Traffic	Scan	5/12	216	(1.0)
Suspended Pivots Rotate Zero-Torque Sling	Scan	8/18	168	(1.0)
Regulated Roller Coaster Avoids Foamy Fill	Scan	10/27	188	(1.0)
Orbiting Pins Store Process Memory	Scan	12/8	173	(1.0)
Contactless Communication System Links Crane Cab to Shop Floor	DIA	1/6	35	(0.5)
Alligator Shear Snips Contaminated Pipe	DIA	1/6	35	(0.5)
Tractor-Mounted Spade Eases Tree-Moving Chore	DIA	2/3	32	(1.0)
Hot Ride on Vacuum Cart Speeds Color-TV Tube Production	DIA	2/3	35	(1.0)
Rug Pattern Sprouts from Air-Jet Needles	DIA	2/17	44	(1.0)
Probe-Triggered Blade Whacks Out Unwanted Plants	DIA	4/14	58	(1.0)
Pole Planter Slips through Garden Gate	DIA	4/28	48	(2.0)
Double-Jointed Loader Maneuvers in Tight Quarters	DIA	4/28	54	(1.0)
Padded Conveyor Keeps Fruit Bruise-Free	DIA	4/28	58	(0.6)
Floating Bed Loads Heavy-Duty Chains	DIA	6/23	46	(2.0)
Detachable Claw Recovers Missing Torpedoes	DIA	7/7	30	(1.0)
Wave Monitor Synchronizes Dangling Cargo and Heaving Ship	DIA	9/1	32	(1.0)
Drive-In Restaurant Features Computerized Cuisine	DIA	10/13	46	(2.0)
Tractor Attachment Really Digs Vegetables	DIA	10/13	52	(1.0)
Twin Swivelling Tongs Bind Big Wire Coils	DIA	10/27	38	(1.0)
King-Size Hydraulic Crane	DI	10/27	44	(0.3)
Concrete Contour Constructor	DI	12/22	31	(0.4)

913. Electrical Machinery

Diagnosis By Dynamometer	Kemmerer	6/23	144	(6.0)
Revised Air-Conditioning Cycle Improves Cooling and Heating	Trends	1/20	26	(1.0)
Alpha and Bravo Carry Orders to Spacecraft	Trends	1/20	32	(0.7)

Partial Success Reported on Radar for the Railways	Trends	3/3	10	(0.7)
Rugged Tape Recorder Thrives on Abuse	Trends	3/31	38	(0.5)
Electronic Nerves Recognize 99 Percent of the Sounds	Trends	4/28	18	(0.6)
Satellite Inflates, Then Loses Its Skin	Trends	5/12	8	(0.5)
'Talking Machine' Telephones Pictures Coast to Coast	Trends	5/26	12	(1.0)
Mohole Boss Tells the Navy How to Go Deep	Trends	5/26	14	(0.6)
Crystals Focus Light Beam on 131,072 Points	Trends	6/9	34	(0.5)
High-Speed System Transmits Graphs and Charts	Trends	6/23	24	(0.6)
Add-a-Unit System Would Build Efficient Highway Communications	Trends	8/4	14	(1.3)
Rocket's Radar Eyes Map Terrain 102 Miles below	Trends	8/4	16	(0.7)
Infantry's Radar Tracks Multiple Targets in Both Azimuth and Range	Trends	8/18	8	(1.0)
Barber-Pole Projector Aids Clear-Weather Landings	DIA	1/6	28	(2.0)
Decision Cells Simplify Weather-Satellite Data	DIA	1/20	48	(1.0)
Tape Plays On Despite Rugged Ride	DIA	2/3	30	(2.0)
Flame Power Boosts Loudspeaker Output	DIA	2/3	38	(1.0)
Pickup Bias Prolongs LP Life	DIA	3/31	44	(1.0)
Instant-Change Traffic Signs Check Autobahn Congestion	DIA	4/28	56	(1.0)
Kid-Powered Record Tells the Story	DIA	6/9	42	(1.0)
Record Player Lets Owner Carry a Tune	DIA	8/4	44	(1.0)
Video Tape Travels Helical Path To Get the Picture	DIA	12/8	50	(1.0)
Mobile Interception Radar	DI	12/8	59	(0.4)

914. Transportation

Snow Vehicles	(Article)	1/20	139	(6.0)
The Great Garbage Explosion	Barnes	2/3	100	(10.0)
Mass Transit Begins To Move	(Article)	3/31	100	(6.0)
Head Ahead on Road to LeMans	Wise	4/28	182	(6.0)
Hot Twins & Compact Jets	Wise	9/1	106	(9.0)
'67 Cars	(Article)	9/15	173	(9.0)
'67 Cars	Wise	9/29	108	(9.0)
Grand Prix Design for the Formula	Wise	11/10	176	(8.0)
Merry Christmas, Chief	Kemmerer	12/8	164	(4.0)
SST: Swing Wing or Delta	Wise	12/22	100	(7.0)
Supersonic Transport Starts into the Mockup Stage	Trends	2/17	14	(0.6)
Idea Car Takes the Wraps off Nearly Ready Gadgets	Trends	3/3	14	(1.0)
Real-Road Data Shake Up the Cadillacs	Trends	3/3	16	(0.6)
DC-10 Candidate Would Carry 550 Passengers	Trends	3/17	8	(0.7)
Starfighter Makes a No-Runway Takeoff	Trends	4/14	8	(0.7)
Three Bombs Are Carried in Space Designed for Two	Trends	4/28	20	(0.7)
Air Mattress Protects Saturn from Technicians' Feet and Butterfingers	Trends	5/12	16	(0.5)
Air Force Plans a Look at Lifting-Body Vehicles	Trends	5/26	8	(0.9)
Supply 'Chute Takes Orders from the Ground	Trends	5/26	10	(0.7)
'Wrist Twist' Steering Clears First Public-Acceptance Hurdle	Trends	6/9	8	(1.0)
Hinged Ship Promises Efficient Use of Locks	Trends	6/9	10	(0.5)
New Tests Are Needed for Rapid SST Development	Trends	6/9	10	(0.5)
Scaled-Up Air-Cushion Vehicle Will Carry a Double Load	Trends	6/9	12	(1.0)
Two Deep Divers Slide down the Ways	Trends	6/9	14	(1.3)
Lunar Walker Tries Toting Crippled Tots	Trends	6/9	16	(1.4)
Monorail Drops an Elevator to Pick Up Passengers	Trends	6/23	12	(0.6)
Silent Sub Will Drift up the East Coast	Trends	7/7	8	(1.0)
SST Nears Point of No Return	Trends	7/7	10	(2.0)
'Private Rapid' Carries Each Commuter from House to Office	Trends	8/18	12	(1.0)
Best Reentry Method: Riding a Helicopter down from Orbit?	Trends	9/15	8	(1.0)

Hidden Engines Promise Fast V/STOL's	Trends	9/29	8	(0.7)
Trapped Air Floats Sea Truck across the Water	Trends	10/13	10	(0.4)
Air-Cushion Vehicles Are Slated for Mass Production	Trends	10/27	10	(0.6)
Helicopter's Rotor Folds away for 500-mph Flight	Trends	11/10	8	(0.7)
Northeast Corridor Cars Get Super-balanced Wheels	Trends	11/10	14	(0.6)
Army Designs New Transporter around Its Cargo	Trends	11/24	10	(0.6)
Jet Jeep Tests Dust Separator	Trends	11/24	12	(0.7)
New Car-Material Concept: Any Fiber Is Combined with Any Resin	Trends	11/24	14	(0.7)
Moon River Will Spring Along on Titanium Wheels	Trends	12/8	10	(0.7)
GM Says Electric Car Is 10 Years Away	Trends	12/8	12	(2.3)
Harmonic Drives Maneuver Robot Arms	DIA	1/20	46	(1.0)
Quick-Change Jet Palletizes Passenger Seats	DIA	3/17	40	(2.0)
Mechanical Helmsman Lets Sailors Relax	DIA	3/17	46	(0.6)
Six-Armed Cable Car Creeps around Obstructions	DIA	5/12	39	(1.0)
Boat-Borne Cutter Mows Underwater Weeds	DIA	6/9	49	(1.0)
Kangaroo Car Carries Trailer in Its Pouch	DIA	12/8	44	(2.0)
Floating Picture Frame	PR	11/10	6	(0.4)
Electronic Warfare	PR	12/8	6	(0.4)
Self-Contained Bubble Car Offers Low-Cost Transport	DI	10/13	37	(1.0)
Fastback Opel Joins Safety Kick	DI	10/13	43	(1.0)
Flameless Electric Car	DI	10/27	44	(0.5)
"Spica" Speedboats	DI	10/27	45	(0.5)
Faster and Safer	DI	11/24	33	(0.4)
Potpouri Minicar	DI	11/24	33	(0.4)
Small Yard 'Extrudes' Massive Ships	DI	12/8	62	(1.0)
Flip-Top Two-Seater	DI	12/22	30	(0.8)

915. Instruments

Air Tool Skins a Patient By Removing 0.001-in. Layers	Trends	1/6	12	(0.5)
Seven-Telescope Earth Girdle Will Watch Over Apollo Astronauts	Trends	3/17	16	(0.7)
Two Advances Are Reported in 3D "Snapshot" Making	Trends	4/14	21	(1.0)
How to Measure Gravity on the Moon	Trends	5/12	19	(0.5)
New Recorder Sketches Sounds by Listening to Magnetic Tape	Trends	9/29	12	(0.7)
Transmitted Energy Indicates Particle Density	Scan	1/6	133	(0.5)
Optical Sensor Eliminates Flowmeter Variations	Scan	3/3	119	(0.5)
Calibrated Spring Guide Indicates Clamp				

Force	Scan	4/14	186	(0.5)
Ultrasonic Ticker Measures Hardness	Scan	5/26	162	(1.0)
Superimposed Images Indicate Vertical Distance	Scan	6/9	140	(0.5)
Prism Provides Readout-Color Option	Scan	6/23	175	(0.5)
Camera Gets Black-and-White Evidence against Speeding Motorist	DIA	1/20	43	(1.0)
Ultrasonic Echo Guides Surgeon's Probe	DIA	2/17	46	(1.0)
Capacitor Charging Time Determines Film Exposure	DIA	3/3	37	(1.0)
Conductivity Change Warns of Water Contamination	DIA	3/3	44	(0.5)
Air-Powered Instruments Speed Delicate Surgery	DIA	4/28	52	(1.0)
Front-Projection System Superimposes Slides and Real Life	DIA	5/12	44	(1.0)
Magnetically Controlled Escapement Turns Flashcube Adapter	DIA	6/9	52	(0.6)
Rugged Camera Will Scan Martian Landscape	DIA	6/23	50	(1.0)
Liquid Lens Takes Blur Out of TV Picture	DIA	6/23	53	(1.0)
Spray Gun Glues on Heart-Sensing Electrodes	DIA	8/4	46	(1.0)
Series-Connected CdS Cells Prevent Underexposure	DIA	10/13	50	(1.0)
Print Paper Needs No Negative	DIA	11/10	46	(0.6)
Cartridge-Packing Pistol Camera Takes Movies Single-Handed	DIA	11/24	42	(2.0)
Baited Camera Spies on Deep Sea Denizens	DIA	12/8	47	(1.0)
Code Bands on Gyro Ball Tell Plane's Attitude	DIA	12/8	53	(1.0)
Two-Air-Force Fighter	DI	12/8	58	(0.4)
Single Lens Rolleiflex	DI	12/8	59	(0.6)

916. Fabricated Metal Products

"Slow-Breaking" Element Catapults Jets Safely	Trends	6/23	16	(0.6)
Quick-Fit Wrench Jaw Tightens Itself	Scan	3/3	119	(0.5)
Grooved Slot Provides One-Way Rope Grip	Scan	3/17	182	(0.5)
Toys Children Christmas	Scan	12/8	160	(4.0)
Mechanical Partner Tests Ping Pong's Skill	DIA	1/20	50	(0.6)
Dial-a-Blade Razor Shaves with Stainless-Steel Band	DIA	2/3	41	(0.5)
Shoe Polisher Combines Vacuum Cleaner and Buffer	DIA	2/3	41	(0.5)
CO ₂ Powers Scuba Diver's Five-Shooter	DIA	2/17	42	(1.0)
Buzzsaw Brake Makes Workshop Safer	DIA	5/26	39	(1.0)
Telescoping Cylinder Supercharges Underwater Elephant Gun	DIA	6/9	46	(1.0)

